



United States
Department of
Agriculture

Agricultural
Marketing
Service

Fruit and
Vegetable
Programs

Processed
Products
Branch

Grading Manual for Frozen Okra

Effective January 1996

Frozen Okra
June 1975

This manual is designed for Processed Products Branch Personnel of the U.S. Department of Agriculture (USDA). Its purpose is to give background information and guidelines to assist in the uniform application and interpretation of U.S. grade standards, other similar specifications and special procedures.

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Product Description

It is unlikely that any color of okra, other than green, will be encountered in commercial operations. Other colors of okra do exist, mainly ornamental varieties, such as white and red. Only green okra meets the product description in the U.S. standards.

Varieties of okra grown for processing are principally one of the following:

Clemson - The pods are green, ridged, and **angular**.

Emerald - The pods are deep-green, smooth, and **round**. Emerald is often fibrous.

Color

Usually, few color variations exist within a single varietal type of okra, unless it has been subjected to poor growing or handling conditions.

Some of the color variations that may be found in frozen okra are:

Dry-weather okra - Pods may be yellow, greenish-yellow, or yellow tipped.

Improper blanching - Pods may be totally dull-oxidized color or have a blotched appearance due to discoloration within specific areas of the unit. Also, underblanched okra may be very bright-green in the frozen condition, but discolor quickly upon thawing.

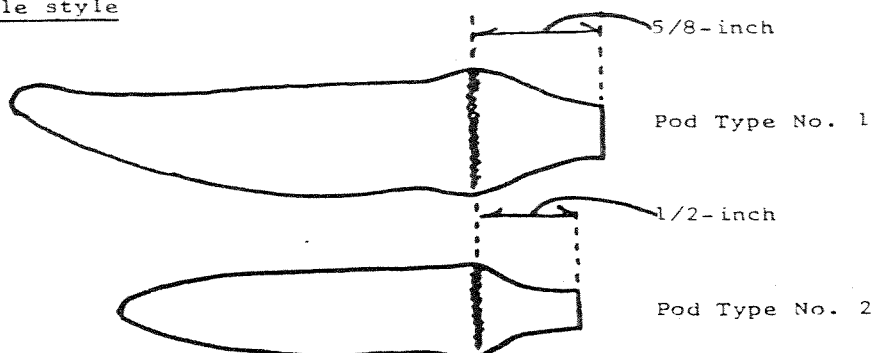
Mixer varietal types- Pods of different varietal colorations produce an overall non-uniform color.

Defects

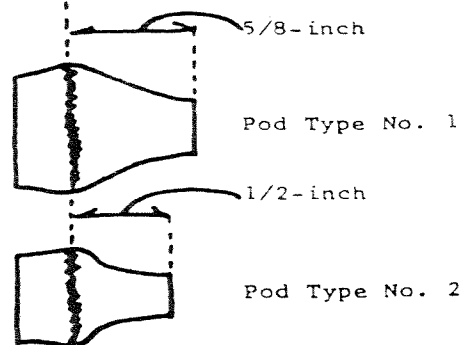
Method of measuring length of attached stems in trimmed okra only.

It is difficult to set a definite, equitable measurement for the length of cap and stem permitted on a unit before scoring it **HEVM**. The method of measurement (point where 1/2-inch actually begins) is a controversial subject and many different interpretations exist. Some okra units have a gradual slope from the cap scar to the stem resulting in a long cap (short stem), while other units have a steep slope from the cap scar resulting in a short, compact cap (long stem). With this characteristic of okra in mind, the 1/2-inch dimension defined in the standards is interpreted as follows:

Whole style



Cut style



Measuring attached stems (continuation)

In addition to the allowances in the U.S. standards, permit the following attached stem material 5/8-inch in length: Provided, that such material is edible:

Cap and stem 5/8-inch in length (measurable from the cap scar.

Pod Type No. 1- **Whole Style -** Grade A - Allow 5 units.

Grade B - Allow 8 units.

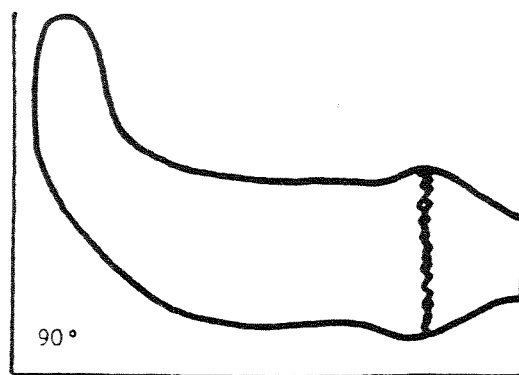
Cut Style - Grade A - Allow 6 units.

Grade B - Allow 9 units.

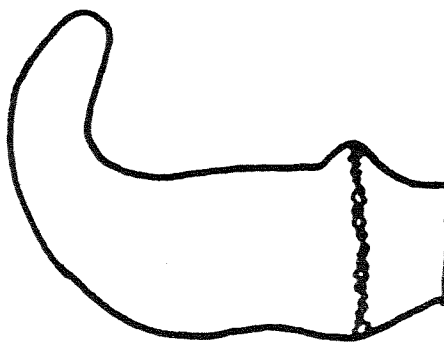
Pod Type No. 2- **All Styles -** All edible stem material over 1/2-inch in length (measurable from the cap scar) is **HEVM**.

Misshapen Units

Insignificant

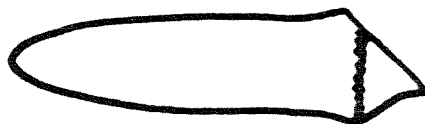


Scorable



Severely biased cut (angle cut or slant cut)

Insignificant



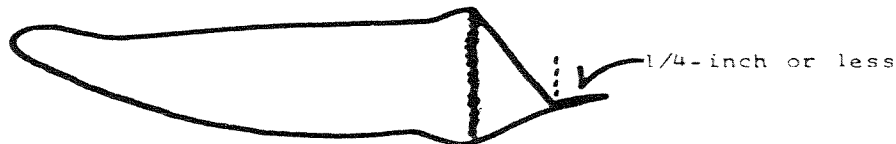
Scorable



{ "excessively trimmed" (exposed longitudinal plane of the seed cavity).

Ragged edges (stem end)

Insignificant



Scorable

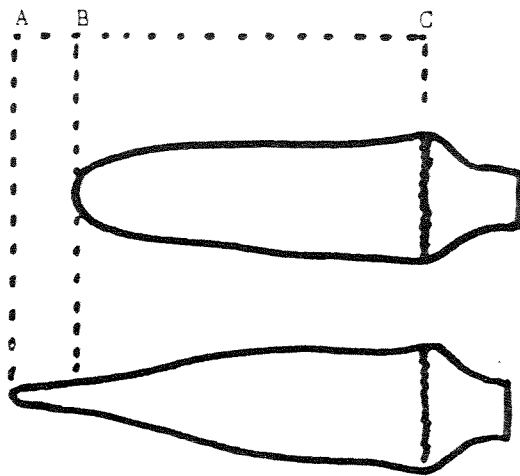


Excessively trimmed (obviously trimmed on both ends)

Literal interpretation of the U.S. standards requires that any pod of okra, in whole style, which is obviously trimmed on both ends be classified as **excessively trimmed**. According to definition, trim on both ends is excessive. The definition seems very strict as insignificant removal of the tip of the pod need not be classified defective.

Many okra pods characteristically have elongated tips while other pods have tips that are short and compact. Pods with elongated tips frequently sustain more damage to the tips than pods with short, compact tips. Although elongated tips are broken or severed from the pods, many of these pods are not objectionable in appearance. Also, excessively trimmed pods are included in the allowance for each grade classification with poorly trimmed, small or damaged units, misshapen units, or any combination of these. With these factors in mind, the following is offered as a guide to aid in scoring pods that are trimmed on both ends.

Obviously trimmed on both ends (continuation)



Pod Tip Type No. 1

Pod Tip Type No. 2

Scorable

Pod Tip Type No. 1 - Obvious removal of the pod tip is scorable as **excessively trimmed**.

Pod Tip Type No. 2 - Removal of the pod tip between points B and C; or removal of the pod tip between points A and B that affect the appearance of the pod, such as ragged tips or shattered tips is scorable.

Insignificant

Pod Tip Type No. 2 - Removal of the pod tip between points A and B which does not affect the overall appearance of the pod.

Harmless extraneous vegetable material

Edible vs Inedible

Edible and inedible are used in the U.S. standards to determine the severity of the defect. Inedible acts as a **stopper** to prevent pods that comply with all other requirements but are objectionable from an eating standpoint from getting by as non-scorable. The classification of edible is subject to personal likes and dislikes and varies from person to person. The following descriptions are offered to expand the definitions in the U.S. standards.

Edible:

Pod material - The material has the texture, flavor, and palatability of succulent okra; and

Cap and stem material - The material is not objectionable upon eating the caps and stems with the knowledge that one **is not** eating pod material. This material does not have the same **texture** as pod material because the caps and stems are solid (have no open space for seed in the center). Further, **flavor** is not the same. Caps and stems have no seed. Seed have a flavor of their own.

Inedible:

Pod material - Inedible pod material is classified under the factor of **character** (tough fiber); and

Cap and stem material - The material is objectionable and lacks the characteristics of edible cap and stem material as described under edible in the foregoing, but can be chewed and swallowed without hazard to the person eating it.

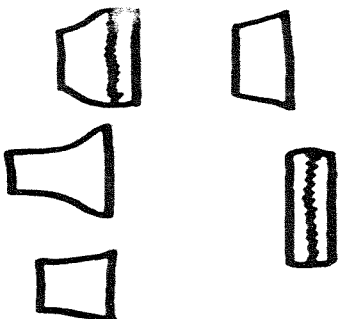

Hard, woody, okra material:

Pod material - This type of pod material is classified under the factor of **character** (brittle fiber); and

Cap and stem material - The material is highly objectionable and would present some hazard to the person eating it. Hard, woody, okra cap and stem material **is not** classifiable as inedible. Sample units containing this material are classified **Substandard**. Allow hard, woody, okra material in a grade A sample **only** as "worse than a deviant" (See File Code 165). It would be allowed in a Grade B sample at the deviant rate.

The HEVM allowance is too strict for cut style frozen okra. More than one piece of HEVM in a sample unit causes it to fail the requirements for Grade A. Often, Grade A whole okra can be cut and fail the requirements for Grade A cut okra because of HEVM. The following guide for classification of HEVM may be used **only** for cut okra.

HEVM (Cut Okra) Cap and Stem Material

INSIGNIFICANT	SCORABLE
	

The above guide **is not** to be used if the cap and stem material is not proportional, in naturally occurring amounts, to the amount of pod material present in the sample unit.

Warts

Okra may be encountered with objectionable **warts** on the pods. When the raw material contains large numbers of **warty** pods, many of these pods will fail to be removed during sorting operations and occur in the finished product. Classify **warty** pods of okra as follows:

Insignificant -	Pods with a faint warty appearance, yet not defined or protruding enough to be noticeable.
Blemished -	See definition for blemished in the U.S. standards.
Seriously blemished -	See definition for seriously blemished in the U.S. standards.

Character

Character evaluation is made on the cooked sample unit. Time will not permit each sample unit to be cooked. Therefore, a reliable method of evaluating fiber on the uncooked sample unit is needed. Based on the trend of the cooked sample units in a sample and the record of previous lots, the following points may be useful in evaluating uncooked sample units.

- Whole style -** Bite the thawed, uncooked pod with your teeth.
- Cut style -** Touch the cut surfaces of the pods and feel for projecting striated fiber. Suspect units may be further evaluated by biting. Brittle fiber is more easily detected with this procedure than tough fiber.

Character (continuation).

Fiber in okra is variable and may take the characteristics of any of the following:

- Tough fiber -** The fiber is tough and objectionable but can be chewed and swallowed without difficulty. This is the maximum severity of the fiber permitted in the tolerances for each grade classification.
- Brittle fiber (woody) -** Brittle fiber (woody fiber) exceeds the severity that is permissible in tough fiber. A sample unit containing brittle fiber is totally objectionable. Sample units containing this fiber are classified **Substandard**. Allow brittle fiber in a grade A sample only as "worse-than-a-deviant" (see File Code 165). It is allowed in a grade B sample at the deviant rate.

When evaluating fiber during processing operations, it may be necessary to cook and carefully check each okra pod in the sample unit at the beginning of the unloading of each truck load. It may take several hours to process one large truck load of okra and early detection of a fiber problem will alert the USDA Inspector or plant quality control to the quality trends for the next several sample units.

Seed size (cut okra).

Okra grown under ideal conditions of moisture and temperature may reach larger than normal pod diameter and remain very tender. However, these pods contain accompanying large, tender seeds. Although these large seeds may be tender (not chewy, hard, or mealy), they fail requirements of the U.S. standards for grade A character.

Allow 10 percent, by count, of tender, large-seeded cut pods (not hard, chewy, mealy, or dark-color seed coat) in grade A. Do not be overly critical in applying the allowance because many units in the sample unit are often borderline.

